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Tuberculosis and the Milk Industry.

By Sir STEWART STOCKMAN.

(*Reprinted from "The Milk Industry," January*, 1925)

Just before the end of the last century, it was held, almost without qualification, that human and bovine tuberculosis were identical and reciprocally transmissable, the important point being infection of human beings from cows' milk. About that time, however, a certain amount of doubt as to the complete identity of human and bovine tuberculosis began to arise owing to the experimental work of T. Smith, in America, which showed that tubercle bacilli of bovine origin were more virulent than those of human origin when inoculated to rabbits and guinea pigs. He also observed that bacilli of human origin when inoculated to the ox might cause no lesion, or if a local lesion was produced it usually did not progress by spreading widely from the site of inoculation. The late Professor Koch, who was also working at the same subject, arrived at similar results with reference to the effect of inoculating bacilli of human origin to cattle. These results, which have since received wide confirmation by various Commissions and individual workers, did not justify a conclusion that bovine tuberculosis was not transmissible to human beings. At the International Congress on Tuberculosis, held in 1901 in London, however, Koch maintained, in effect, as the result of his observations, that the disease in the two species was practically distinct; that if a human being could be infected with bovine tuberculosis, it so rarely happened as to be negligible; and that measures against bovine tuberculosis for the protection of human beings were not called for. The importance of this announcement, coming as it did from so distinguished an authority as Koch, led to the appointment of a Royal Commission in this country and similar bodies in other countries, to examine the whole question of human and bovine tuberculosis. As the outcome of the work of these Commissions and that of many individual workers, it is now generally accepted that there are decided cultural and disease-producing differences between the Bacillus tuberculosis most commonly found in the lesions of tuberculous human beings and those of cattle, which enable the bacillus to be differentiated into human and bovine types, and to be identified as such; that, although practically all cases of phthisis (tuberculosis of the lungs in humans, or consumption) are caused by the human type of bacillus, there is in human beings a large proportion of the tubercular affections of the skin, and of glands, abdominal organs, and bones, in children, due to the bovine type of bacillus. The circumstances of their occurrence, moreover, carry conviction that the infection is derived from a bovine source, tubercle-infected milk being one of the most important factors of causation.

These findings have naturally created important problems in human and veterinary hygiene, and a desire on the part of both dairymen and the milk-consuming public that they should be solved in a satisfactory manner.

A beginning has been made, which takes the form of milk grading. Under Section 3 of the Milk and Dairies (Amendment) Act, 1922, the use of special designations such as "Certified Milk" "Grade A (Tuberculin Tested) Milk," and "Grade A Milk," is protected by licences, which are issued subject to certain conditions being complied with. Among the conditions relevant to the first two mentioned grades is that the animals of the herd must pass the tuberculin test applied at intervals of six months, all reactors having to be removed forthwith; no new animal which has not passed the test may be added to the herd. Further, the herd must be submitted every three months to a clinical examination by a veterinary surgeon with a view to eliminating any animal showing clinical symptoms of tuberculosis in the udder, emaciation from tuberculosis, or any definitely clinical form of severe tuberculosis. For the purposes of a "Grade A" licence, the tuberculin test is not exacted, but the periodical clinical examination by a veterinary surgeon, followed by the elimination of all animals showing tuberculosis in a distinct clinical form is required.

There are other requirements than those mentioned above which must be fulfilled, but these have no direct relation to the elimination of animals giving or likely to give tuberculous milk.

Provisions of this kind are all very well so far as they go, and since a comparatively small but certain number of milk producers have seen their way to conform to the grading conditions, it is possible for a limited, number of consumers to obtain milk with which there is a reasonable guarantee that it does not contain bovine tubercle bacilli. The extra price which such milk commands is no doubt attractive to the producer, but it may fairly be asked if such prices would obtain, supposing the provisions of the grading scheme came to be adopted by the many instead of by the few. In relation to the general hygienic problem, there are, however, objectionable features which arise from the operation of the scheme.

The reactors have to be got rid of. A few may be sent to the abattoir, but the majority are sold in the market, and go elsewhere, carrying with them whatever dangerous potentialities they possess. It may be, of course, that reactors which are free from emaciation, lesions of the udder, and voluminous lesions of the lungs, are not likely, unless the disease progresses, to supply tubercle-infected milk, but it can hardly be contended that any scheme with such attributes can be expected to contribute to a solution of the larger and general problem, which will only be solved by some method which aims at the elimination of tuberculosis from our herds in general. The proposed introduction, or rather reintroduction, of the Tuberculosis Order, which would provide *inter alia* for notification by stock owners to the authorities of animals affected with, or suspected of being affected with, tuberculosis in a clinical form—emaciation, disease of the udder, etc.—and for the slaughter of such animal, with compensation to the owners, would undoubtedly carry matters much further, and would effectively eliminate at least a large proportion of the most dangerous milch cows. But it would be against knowledge and experience to believe that it can be anything more than a palliative as regards human and animal hygiene in relation to tuberculosis. Such measures can only be expected merely to touch the fringe of the main problem, that of elimination.

The now well-known method of Bang, which aims at eliminating all tuberculous animals from a herd by means of the tuberculin test, followed by slaughter or rigid isolation of the reactors until ready for slaughter, and by scrupulous disinfection of premises, has much to recommend it, and has undoubtedly proved successful in certain individual herds. Only a minority of stock owners, however, possess the necessary accommodation to enable the method to be carried out with any hope of success, and few could afford the necessary loss of capital and business consequent upon having to accept butcher prices for animals for which prices of milch cows have been paid. There is also the serious difficulty of obtaining at short notice tuberculin-tested cows to replace those discarded. It is obviously not within the scope of practical politics, in this country, at least, to adopt a policy of testing all cattle, or even all milch cows, slaughtering the reactors, and paying compensation to their owners.

Without such slaughter, however, the majority of the reactors find their way to the markets, and their baneful activities are merely transferred elsewhere. Nobody could regard that as a desirable condition of affairs.

The practical solution of the problem of milch cows free from, or highly resistant to, tuberculosis, has yet to be found, and it would seem that only by such a solution the case of the dairy industry and tuberculosis is likely to be met. It may be asked, then, whether there is any reasonable promise of it being met. Obviously, that is a question difficult to answer; art is long but life is short. It would seem, however, worth while examining the possibilities of immunisation, which in the case of some other disease of man and animals has rendered signal service.

Immunity towards certain diseases may, owing to an attack, be acquired rapidly by the individual, but racial immunity, or rather, let us say, comparative resistance or tolerance, is very slowly established. For example, it is well known there are races or communities which, owing to their isolated position, have never been exposed to tuberculous infection, and that on the introduction of heavy infection, it has spread amongst their members at an enormous rate, with extraordinarily fatal results, as compared with those races among which infection has been of long standing.

In an article of this kind it is not possible to probe deeply into the perplexing questions surrounding immunity in general. As regards tuberculosis, however, it would seem from our present knowledge it is not a disease against which immunity in the more definite and stricter sense can be acquired, but there would appear to be little doubt that, given a slowly established infection of a local nature, a patient may acquire a kind of tolerance or resistance, which prevents the disease assuming a rapidly progressive or galloping form. That resistance, which seems to depend on the maintenance of a local focus of infection, may be broken down by submitting the patient to adverse influences, such as starvation, close housing, over work, high milk production, etc. Its maintenance may be favoured by avoiding such influences. That kind of tolerance, which may exist with regard to certain other diseases, is sometimes referred to more or less popularly as "being salted." There is experimental evidence in support of the above views. If a certain dose of tubercle bacilli (bovine) be injected into the veins of a non-tuberculous bovine animal, it will develop a generalised miliary tuberculosis, and die within a more or less prescribed period. If, however, the same dose be injected in the same way to an animal which has a tuberculous focus, and in which a regulated balance, as it were, has been established between the host and the bacilliary parasite, nothing further may happen, and the animal may continue to survive. For a number of years various research workers have attempted, taking advantage of this knowledge, to elaborate methods of giving to bovines a degree of resistance to tuberculosis which would serve the needs of practice, and possibly prevent the occurrence of tuberculosis in the ordinary sense. Among the most notable methods is that of Von Behring, who used as a vaccine a human strain of bacilli, which was inoculated intravenously. When the immunity of the vaccinated animals was tested by inoculating bovine bacilli, or by exposing the animals to natural bovine infection, it was found to be insufficient for the needs of practice. In addition, however, the use of a human strain of bacilli possesses grave objections. Tubercle bacilli, even those which do not increase by vegetating in an unsuitable medium for culture, are very slowly destroyed by the defensive cells of the body. They remain in the glands for more or less long periods, and may be excreted in the

milk from time to time. The possibility, then, that this method may result in milk being contaminated with the human bacillus, is of itself sufficient to condemn its application to milch cows.

The scope of this article does not permit discussion of all the other methods which have been tried and found wanting.

Calmette, of the Pasteur Institute, Paris, has been amongst the most distinguished workers at this problem for many years. By submitting a strain of the bovine bacillus to a special process of cultivation outside the bodies of animals for a period of years, he has obtained it in a living form which is harmless. When injected into animals it does not make them ill, nor does it produce lesions. The bacilli, however, retain their power of resisting the attacks by the cells of the body, and many of those injected, say under the skin, remain undamaged, mainly at the site of inoculation, for about twelve months, or even longer. It suggested itself to Calmette that these living bacilli of a strain which had lost its disease-causing faculty need not necessarily have lost their " salting " capacity, and might play the part of a harmless but active focus of protection. In collaboration with his colleague, M. Guerin, of the Pasteur Institute, Lille, he has tested cattle vaccinated with this harmless strain by inoculating them at various periods thereafter with virulent bovine bacilli, or by exposing them to natural infection. He has found them to resist the virulent inoculation or exposure, whereas other animals not vaccinated succumbed. An important practical factor is the duration of protection. Calmette and Guerin say that the focal bacilli persist for about fifteen months, but advise re-vaccination at the end of twelve months. Their idea is that all calves born in a tuberculous herd should be vaccinated in the first fortnight of life ; that the vaccination should be repeated each twelve months, and that it should be carried on for five years. At the end of five years it is suggested most, if not all, of the old tuberculous cows (the worst disseminators) will have been worked out of the herd, which will then consist mainly of " salted " animals. Obviously, however, the method, should it prove effective in practice, ought to be capable of even more extended application.

The writer is well aware that a method which may give very promising results in a comparatively small number of animals under suitable experimental conditions, may fail when applied widely under the very varying conditions found in practice. He has formed the opinion, however, that this method has now passed beyond the experimental stage, and that owing to its distinct promise, its harmlessness, and the vast importance of the issue, merits a sufficiently extended trial in practice under suitable conditions to test its efficacy as a method of dealing with the tuberculosis question.

With this object in view, it has been arranged, through the kindness of M.M. Calmette and Guerin, to prepare this vaccine at the laboratory of the Ministry of Agriculture, and to issue it to owners of suitable herds who are prepared to co-operate in testing the method. The vaccine will be issued free of charge, and without cost to the owners of selected herds the Ministry's laboratory staff is prepared to provide the general supervision in collaboration with the local veterinary practitioner whom the owner employs to carry out the vaccinations.

. . . . .

The following is the scheme to which reference is made above and which is authorised by the Ministry of Agriculture :—

MEMORANDUM ON PREVENTIVE INOCULATION AGAINST TUBERCULOSIS.

By Sir STEWART STOCKMAN.

It should be unnecessary to impress the importance of tuberculosis to the stock industry. Stock owners are well aware of its prevalence in their herds, and many are only deterred from a serious attempt to eradicate it by the great expense and labour involved in continuously carrying out tuberculin testing and disposing of the reactors.

After many years of work on the subject, Dr. Calmette, Director of the Pasteur Institute, Paris, and M. Guerin, of the Pasteur Institute, Lille, have elaborated a method of preventive inoculation which, in the view of the writer, gives distinct promise of useful results. The method has been tested on a fairly large experimental scale with apparent success. It has, in fact, passed beyond the experimental stage, and fully merits a trial under the varying conditions which obtain in the field of practice. It involves no particular separation of calves from their mothers, or of reactors from non-reactors, nor does it require that the calves be fed on pasteurised milk. It will be obvious, however, that the greater the effort by general measures of hygiene to protect the vaccinated animals against gross infection by keeping the byres clean, by the use of disinfectants, by separating the vaccinated as far as practicable from the older animals of the herd, by eliminating all those useless and very dangerous cows which have become emaciated or developed disease of the udder, and by rearing the vaccinated animals in the open, as far as possible, the better are the results likely to be.

The material used for inoculation is a living culture of the bacillus of bovine tuberculosis, which, by a special method of artificial cultivation carried on over a period of years has lost its virulence and become harmless, although it does not seem to have lost its power of conferring a material degree of resistance against natural infection. What has to be determined before extending the method generally is whether, under the conditions of practice, the degree of resistance conferred by this harmless inoculation will be sufficient for the needs of a non-tuberculous animal which in the course of its life is exposed to the ordinary risks of infection met with.

Arrangements have been made with the kind co-operation of MM. Calmette and Guerin to prepare the vaccine at the Ministry's Veterinary Laboratory. It will be issued for use in suitable herds in which tuberculosis exists, and which from the prevailing

conditions seem most likely to give a definite answer regarding its efficacy.

The idea of the method is to vaccinate within the first fortnight of their life, all calves born or brought into the herd; to repeat the vaccination every twelve months, and to continue the operations over a period of about five years, by which time most of the older and tuberculous cows will, in the ordinary course of business, have been worked out of the herd, when it is expected the latter will consist of adults which have been kept free from natural infection by vaccination.

The material will be issued without cost to the owners of selected herds. The supervision of progress will, as far as possible, be carried out by the Ministry's staff, but owners will be expected to arrange with their veterinary surgeons to carry out the inoculations as from time to time calves fall due for vaccination.

It will be necessary to give each calf a name or number whereby it can be identified and its history followed.

It is proposed that each owner whose herd is being treated should:—

(1) Inform the Laboratory of the approximate number of calves expected in each month of the year, so that material can be held in readiness.

(2) Notify the Laboratory immediately a calf is born, so that material for vaccination can be sent within the first fortnight of its life.

(3) Keep a book, a duplicate of which will be kept at the Laboratory to simplify reference and working, recording date of each vaccination against the name or number of each calf, and the date twelve months afterwards when the next inoculation is due.

(4) Keep particulars regarding the disposals, if any of the vaccinated animals are disposed of.

(5) Notify to the Laboratory any deaths amongst the vaccinated animals or intention to send them to the abattoir, so that post-mortem examinations may be made.

For testing the method in the first instance it is proposed to confine operations to pedigree herds and to dairy herds, the owners of which breed the calves destined to keep up the herd. If the method proves efficient, it will no doubt admit of such wider extension, but for the moment it is not considered that herds in which constant sales of calves and purchases of cows are going on could furnish the evidence desired.

Owners of herds such as are described above, are invited to offer their herds for treatment. In doing so they are requested to state:—

(*a*) Number of cows in the herd.

(*b*) Approximate number of calves bred and retained annually.

(*c*) The approximate proportion of tuberculous cows, if known.

(*d*) Whether the herd has been tested with tuberculin, and if so, the result.

(*e*) If not tested, whether there is any objection to having it tested.

(*f*) The name and address of the local veterinary surgeon who attends.

(Continued at foot of next column)

Recommendations made by the National Clean Milk Society in respect of immediate future Milk Legislation.

The Council of the National Clean Milk Society have submitted to the Ministry of Health and Ministry of Agriculture the following recommendations, which it suggested should be embodied in impending legislation.

I.—TUBERCULOSIS ORDER, 1914:

It is advisable that the Order should be reintroduced with the following amendment:

That the sum to be paid as compensation to the owner of a tubercular animal condemned under this Order should be limited to the sum received by the Local Authority as the value of the carcase of the slaughtered animal.

In case the amount of compensation should continue to be allowed on the basis at present provided by the Order no part should be paid by the ratepayer, the entire amount being paid by the Exchequer.

II.—MILK AND DAIRIES (CONSOLIDATION) ACT, 1915:

This Act should not be rescinded: a new Act should be prepared embodying the provisions of the Acts of 1915 and 1922, with the following amendments and additions:

III. MILK AND DAIRIES (AMENDMENT) ACT, 1922:

(*a*) Section 2 (1), line 6, the word "retail" should be omitted, and the paragraph should read:

"Any local authority by whom a register of purveyors of milk is kept under or in pursuance of any enactment in that behalf, may, if they are satisfied that the public health is or is likely to be endangered by any act or default of any person who is registered or who seeks to be registered therein as a purveyor of milk, in relation to the quality, storage, or distribution of milk," etc.

(*b*) Section 3: There should be no charge for licences for the use of Special Designations in connection with the sale of milk.

IV. (*a*) It should be made illegal to use such expressions in connection with the sale of milk as "guaranteed," "nursery," "invalids," etc. The only designations permitted should be those referred to in Milk (Special Designations) Orders.

(*b*) All milk should be sold by Imperial measure.

(Continued from previous column.)

Since for a time the vaccinated animals react to the tuberculin test, it is not proposed as yet to include any herds licensed to supply "Certified Milk" or "Grade A (Tuberculin Tested) Milk" but applications as regards Grade A herds will be welcomed.

All information will be regarded as strictly confidential. Applications and communications should be addressed to the Director of Veterinary Research Laboratory of the Ministry of Agriculture, New Haw, Weybridge, Surrey.

(*c*) It should be made illegal for one milk dealer to use churns, cans, or bottles that bears the name of another dealer without the consent of the latter.

(*d*) A Local Authority should have power to prohibit any seller of milk from selling milk within its area (whether it be produced within or without its area) if it finds that the public health is or is likely to be endangered by the sale of such milk.

(*e*) Any milk offered to the public which has been pasteurised or otherwise treated by heat should be described as "Pasteurised" (as described under the Milk (Special Designations) Order, 1923) or as "Heated" milk.

(*f*) County Borough Councils, Borough Councils, and Urban District Councils should have the power to adopt Model Milk Regulations, approved by the Minister of Health in regard to milk sold within their area which should include power:

(i) To classify all milk in accordance with the system of classification set up by the Ministry of Health.

(ii) To require all milk offered for sale for delivery to consumers to be delivered in sealed bottles.

(*g*) County Borough Councils and Borough Councils of areas upwards of 50,000 inhabitants should have the power, with the consent of the Minister of Health: To require any grade of milk other than "Certified" or the present "Grade A" (Tuberculin Tested)" to be pasteurised.

V. MILK (SPECIAL DESIGNATIONS) ORDERS.

(*a*) The designations to be provided should be:

(i) "Certified" as described in the Milk (Special Designations) Order, 1923.

(ii) "Grade A" as described as "Grade A (Tuberculin Tested)" in the Milk (Special Designations) Order, 1923.

(iii) "Grade B" as described as "Grade A" in the Milk (Special Designations) Order, 1923.

(iv) "Grade C" to be used in respect of any raw milk that does not comply with the requirements of "Certified," "Grade A," or "Grade B." This designation to be used only in any area where all milk is classified as per IV. (*f*) (i).

(*b*) Any grade of milk should be permitted to be pasteurised and so described when offered for sale, except "Certified" and "Grade A (Tuberculin Tested)."

(*c*) The bottle cap used for each grade of milk should be required to be of a different colour.

(*d*) No wording should be permitted to appear on any bottle containing milk sold under a special designation that is not permitted by the Milk (Special Designations) Order, 1923, to appear on the cap of the bottle.

VI. If possible, the Government should take steps to ensure that Local Authorities inspect registered purveyors and that registering authorities should be required to send to the Ministry of Health regular reports in regard to the inspections made in their areas.

The Origin of Foot-and-Mouth Disease.

"It is said that if you plant a row of empty bottles upside down in your garden they will presently be occupied by healthy little ferns, which shows that fern spores are universally present and will manifest their presence if anywhere suitable conditions are provided for their development. The epidemiology of foot-and-mouth disease suggests that the virus of that elusive disease is in much the same position as the fern spores and that it is local conditions which determine the outbreaks of the clinical malady. It is possible, however, that it is really carried about by some moving agent—perhaps by man and his belongings, perhaps by birds—and any attempt to explore the possibilities of this is welcome. Professor J. M. Beattie and Dr. D. Peden, of Liverpool, bring forward evidence in the last number of the *Journal of Pathology and Bacteriology* (vol. xxvii., p. 415) implicating rats. They show in the first place that feeding or inoculating rats with lymphatic glands from cows slaughtered because they had been in contact with declared foot-and-mouth disease can give rise to an affection characterised by œdematous swelling of the feet and vesicles and ulcers on the feet and on the tongue, and that this can be transmitted from rat to rat in series. From their observations it seems fairly clear that rats can be infected with the disease. In a proportion of these rats they also observed areas in the lung—solid, yellow, rather translucent—which they describe as gelatinous œdema. Examining carefully the wild Liverpool rats which are regularly dissected in connection with possible plague, they found this lung condition in about 2 per cent., and they show that the places where these animals were caught are suggestively related topographically to slaughter-houses and places which had certainly had contact with infected cows by means of the sewers. Inoculations from these sewer rats supposed to be suffering from foot-and-mouth disease did not succeed in infecting fresh animals, and it must be admitted that the case for the wild rats having foot-and-mouth disease at all is not strong. A lung condition, not obviously dissimilar from that described, is known to occur both in wild rats and in many laboratory rats after their first youth, and Professor Beattie himself does not regard the association which he describes as beyond doubt. However that may be, the fact that rats are susceptible to foot-and-mouth disease (first published in *The Lancet*, 1924, i., 221) is important and suggestive, especially in respect of the persistence of infection in a locality. It is only under very exceptional circumstances that rats migrate or are carried over long distances, and their possible function in causing widely separated outbreaks in cattle is still more problematical."—*The Lancet.*

In our issue of January 3rd, page 15, under "New Meat Regulations," on the third line of the paragraph, "No. 1422" should read No. 1432.

It is of interest to note that, of the following five members of the profession appointed to act at the London Shire Horse Show in February, 1925, the first three are members of Council R.C.V.S.:—Messrs. J. Abson, W. S. King, G. H. Locke, E. H. Curbishley and T. Eaton Jones.

The Veterinary Record.

17th January, 1925.

IMPROVEMENTS AT THE MINISTRY OF AGRICULTURE.

We are at last in a position to announce the changes that have taken place at the Ministry of Agriculture with regard to the number and pay of the veterinary staff. Our readers will remember that the Association has been much concerned in this matter for some considerable time, as it has been clearly understood that the pay and conditions of service of these gentlemen have a more or less direct influence upon the whole profession and a very particular influence upon all Government appointments, both at home and in the Colonies. That the Ministry has at last seen that it was necessary to make some improvement is due in no small measure to the pressure which has been brought to bear by this Association and especially to the evidence which it was able to present to the Foot-and-Mouth Disease Committee. The latter body was sympathetic and is believed to have made strong recommendations. The agricultural community also recognised the justice of the claims put forward. The result is seen in the increase of staff, together with the increase of pay—circumstances which entirely alter the conditions under which an inspector is now called upon to serve. The present staff now allowed is as follows :—

1	Chief Veterinary Officer and Director of Veterinary Research... ...	£1,400
1	Deputy Chief Veterinary Officer	£1,000
(5) 9	Superintending Inspectors	£600—£25—£800
(23) 30	Divisional Inspectors ...	£450—£20—£600
(58)*60	Inspectors (15 non-established)	£250—£15—£450

All of the posts are pensionable, except those of the fifteen non-established inspectors. All the salaries carry the civil service bonus in addition, namely, £119 on £250, £171 on £450, £189 on £600, £209 on £800, £219 on £1,000 and £209 on £1,400. The starting salary of an inspector is therefore £369, a Divisional inspector £621, and a Superintending inspector £789 per annum.

While the new scale is a vast improvement on the old, there are still some details which are not altogether satisfactory and these will now occupy the attention of our Appointments Committee. An inspector, on joining the service, has to serve some three years on probation and is only appointed to the establishment as and where vacancies occur. We think that when he is finally selected for establishment, he should at once be placed on a higher rate of pay than those who remain non-established. In other words, we should like to see an efficiency bar after three years' probation, so that efficiency and suitability should count more than seniority, and that efficiency should receive not only promotion, but monetary reward. The age condition of candidates is open to criticism, as it now stands (21 to 32, less any period of war service). Twenty-one—the earliest age at which a man may graduate—is too young. No matter who or what he is, the new graduate would be all the better for *at least* one year's experience of country practice. Thirty-two—when five years' war service is added—is much too old. In the majority of cases a man at thirty-seven finding himself so circumstanced that he has to apply to the Ministry for permanent employment, admits himself a failure *ipso facto*. These early criticisms must be at once evident to those who have studied the question. We mention them now, not in any carping spirit, but rather from the wish that the Ministry may be in a position to obtain the best men we can give it. There are other details which demand more consideration than time has yet allowed, and upon which we hope to have more information at a later date. We are sure, however, that not only the veterinary profession, but agriculturists in general, will sincerely regret that the new scale shows no recognition of the magnificent work that has been given to the country by Sir Stewart Stockman and Mr. Jackson. Neither of these receives a salary in any way approaching the value of his services or the responsibilities of his position. Sir Stewart receives the same amount of salary that he had before the foot-and-mouth epidemic. Taken, as a whole, however, the new scale is satisfactory. We congratulate the staff at the Ministry and we congratulate the National Veterinary Medical Association on having accomplished a very useful piece of constructive work, which should have far-reaching results, all of benefit to our profession.

*Of whom 19 were temporar . Numbers in brackets refer to previous strength

Royal Sanitary Institute Jubilee.

The Jubilee of the Royal Sanitary Institute falls in 1926, and it has been decided to celebrate this occasion by holding a Congress in London as the centre most appropriate for representing its widespread work, and it is hoped to make it an opportunity for gathering together those engaged in Public Health work from all parts of the Empire, and for bringing responsible opinion to bear on the many questions affecting the health of the people.

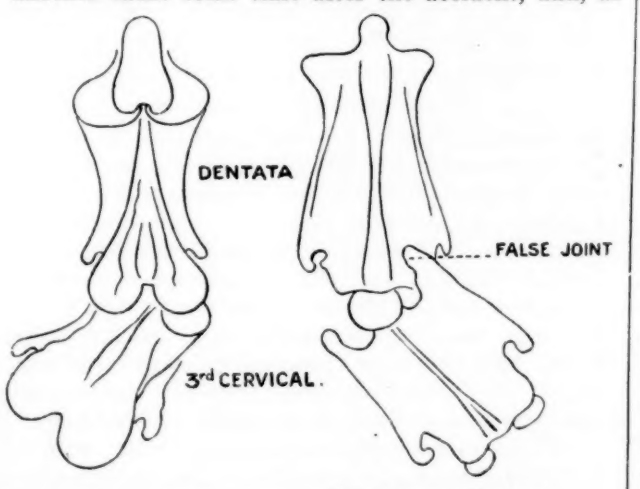
CLINICAL AND CASE REPORTS.

Partial Dislocation of the Neck, with Restoration to Usefulness.

By Major-General Sir FREDERICK SMITH, F.R.C.V.S.

The case of partial dislocation of the neck herewith recorded did not occur in my own practice, but the part was sent to me for dissection. I have no record of the original accident, but believe it was due to a fall when jumping in a race. Instantaneous photographs of accidents when jumping show, as a common position, the horse with the head flat on the ground, the neck acutely bent, and the body in the air descending on it. If a fracture occurs, the animal does not move again, though even to this general rule exception is not unknown—see *Veterinarian*, January, 1853, where a two-year-old colt stood and lived for sixteen hours after a fracture through the body of the dentata. If a partial dislocation occurs, death may not take place. The animal when standing presents an obvious distortion of the neck, the head is carried low and turned to one side, and there is a marked hollow on one side of the neck, and a bulging on the opposite side. I have read and heard of such cases being treated by extension or by forcible reduction, such as jumping on the convex surface while the animal is lying on the ground, but imagine that in order to succeed it must be employed early. If a day or two has elapsed no admissible effort would appear sufficient to effect reduction. After the patient has been in this condition for weeks some degree of mobility occurs, and in due course work may be attempted. I here speak from personal knowledge, and state that a horse with a partial dislocation of the neck with marked deformity, may be capable of limited use even for saddle purposes. I was, however, certainly not prepared to learn that a horse in this condition could subsequently win a race! Such was the history of the animal whose second and third cervical vertebræ are herewith figured.

I never saw the case during life; it died from another cause some time after the accident, and, as stated, the neck came to me for dissection. My notes on the history of this animal merely record the fact that the horse subsequently raced: after this interval of time I have no means of obtaining further information, my correspondent has long since been dead.



On dissecting the neck, I found that the third cervical vertebra formed an acute angle with the dentata, the articulatory head was partly out of its socket, the left anterior oblique process was forced forwards under the body of the dentata, and at this point the bone was slightly worn through friction, and a false joint formed. Fragments of the oblique process were also knocked off. The spinal cord was not examined, in order to save a rare specimen from destruction.

The first case of dislocation of the neck recorded in English literature was by W. C. Spooner, of Southampton, an extremely able practitioner, see *Veterinarian*, December, 1838. He tells us that the animal was entangled in its halter rope for some hours, and was found lying with the head under the body. When got up it was observed that the neck was bent, the head could not be raised more than a foot from the ground and as a consequence it swelled considerably. The patient was placed in slings, the head and neck supported from several points, the head being raised to the level of the manger. In a week there was improvement, the animal was able to walk, the neck straightened, and the horse eventually recovered without the slightest appearance of deformity.

In the *Veterinarian* for July, 1839, J. W. Ions, of Waterford, recorded a case in which he straightened the neck by forcible extension; he heard the reduction effected, and this was followed by recovery. Attached to this record is a long note by Youatt, who appears very doubtful of the existence of a dislocation. In the *Veterinarian* for August, 1847, Charles Percivall, writing from Canada to his cousin William Percivall, says that he saw a horse at work with a broken neck. The accident occurred as a three-year-old by falling into a ditch; he describes that the neck on the off side presented a great protuberance, and on the near side a hollow into which a quartern loaf could be placed; the head was carried very low, inclining to the near side and turned rather backwards.

I have no doubt that since 1847 several other records have appeared, but the above suffice to prove that a partial dislocation of the neck need not be fatal, nor the animal deprived of subsequent utility. An unreduced dislocation is an opprobrium to the surgeon, but I am inclined to think that in the case of the cervical vertebræ it would be wise to let well alone; it may reduce itself, as in Spooner's case, but if unreduced it is not incompatible with subsequent usefulness. On the other hand, if the neck is distorted and the animal unable to rise, Ions's heroic method of forcible extension *might* be followed by reduction.

The late Professor W. Williams, in his text book on *Veterinary Surgery*, gives the history of a case of partial dislocation of the neck which occurred between the third and fourth vertebræ. There was the usual marked deformity. Four days after the accident the

animal walked two miles with very little difficulty; there was no swelling of the part, and the head could move up and down with a moderate degree of freedom, but every attempt to straighten it produced paralysis of the limbs. Being very old it was decided to destroy the case; on forcibly stretching the neck, for the purpose of exposing the carotid artery, the dislocation was reduced and was followed by immediate death. On *post-mortem* examination the fibro-cartilagenous disc between the third and fourth vertebræ was found in a pulpy condition. The spinal cord was but slightly affected, and there was no fracture.

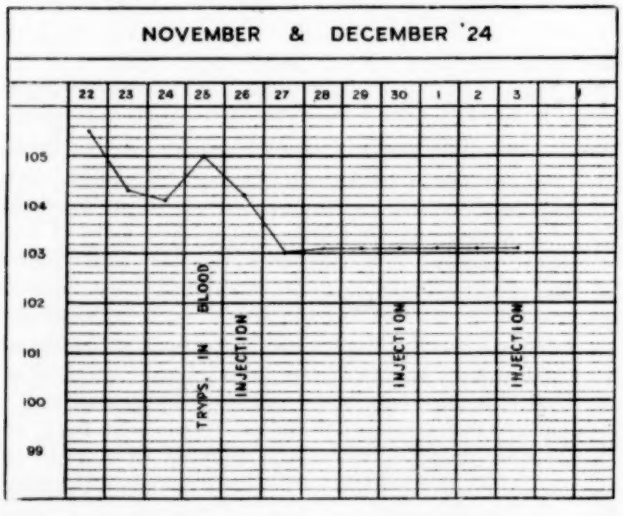
It is extraordinary how the spinal cord escaped injury in the cases narrated, no doubt owing to it being much smaller than the canal in which it is lodged, but in looking at the figure "seen from below" one naturally wonders how it could possibly escape being stretched.

If I had not had the history of this case from a perfectly reliable source, and the bones figured above had been handed to me in the witness box, I should have said that no horse with a neck in this condition could have performed work. I now know differently, and since I made that dissection I have met with a case.

Sodium Protosonate in the Treatment of Trypanosomiasis.

By A. Seton Milne, M.R.C.V.S.,
Government Veterinary Surgeon, Georgetown, British Guiana.

On the morning of the 20th November, I received a telephone message to attend an imported shorthorn bull, "Sampson," which was suffering from fever. The animal was off feed and very dull, with a rising temperature. He was treated with ordinary febrifuges until November 25th, when examination of blood smears by Dr. F. G. Rose, Government Bacteriologist, and myself revealed trypanosomes closely resembling the organism of mal de caderas. The following day, therefore, I injected directly into the



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ABSTRACTS.

(Eliminating Tuberculosis from Badly Infected Herds, Conklin, R. L., *Journal of the American Veterinary Medical Association*, Vol. lxvi. October, 1924, pp. 13—17.)

Much dissatisfaction prevails regarding the old subcutaneous method of inoculation of tuberculin for separating infected and non-infected cattle. To deorease the risk of an infected animal escaping detection, the author advises the application of varicus combinations of the following modes of inoculation; (*a*) intradermal; (*b*) ophthalmic; (*c*) intrapalpebral, and (*d*) subcutaneous. "The principle upon which the tests were applied centred about the hyposenitisation of the individual." Records of tests from the autumn of 1921 to the autumn of 1923 were kept, and the cases recorded are taken from this memorandum.

Case Reports.

Herd 1.—Tested by a triple method (subcutaneous, intradermal, and ophthalmic).

Animals which had hitherto been tested only by the subcutaneous method, and had for years evaded detection, reacted to the combined intradermal and ophthalmic tests. Autopsies confirmed reactions. Many cases display the peculiarity of giving a reaction to only one or two of the triple modes of inoculation. "The lesions ranged from open lesions to generalised tuberculosis in the cases of those animals which had reacted to the ophthalmic test only. The remainder of the cases exhibited localised lesions."

Some surprising effects were observed in the course of various experiments upon groups of this herd. Indications of infection, when the intradermal method was employed, were suppressed when the subcutaneous method was used previously, or before the effects of the former method could become apparent. A subcutaneous inoculation, on the other hand, could not suppress symptoms of infection by the ophthalmic method, no matter when or how often it was administered.

As a result of numerous experiments, the author devised a special routine method for making tests, which he denominates "the follow-up method." It

(*Continued from previous column.*)

jugular vein a full dose of sodium protosonate received for experimental purposes from the Institute, Oswaldo Cruz, Brazil, through His Excellency, Sir Walter Egerton, K.C.M.G.

On 27th November, the animal was bright and feeding slightly, and this improvement continued daily, but I repeated the injections of a full dose of the drug on 30th November and 3rd December. From 4th December the bull's temperature was kept at 102 degrees Fahr., and at repeated examinations no trypanosomes have been found in his blood. I have since successfully treated several cases with the same drug, whereas previously we lost every imported bovine animal affected with trypanosomiasis.

consists of a series of inoculations by different modes. Firstly, an intradermal inoculation is given into the subcaudal fold, and a sensitising tablet placed in the eye; at the 72nd hour reading, a second ophthalmic tablet is given, and again, after an interval of five more days, a third tablet simultaneously with an intrapalpebral inoculation. At the end of a further interval of 60 hours, a fourth tablet is placed in the eye. This method of testing herds has produced positive results in large numbers of cattle, which had "passed" previous tests. Moreover, no animal which gave no reaction to the test was afterwards proved to be infected.

Herd 2.—Experimented upon in the same way as Herd 1. Twenty per cent. of animals which had not reacted to a previous regular test, reacted to the follow-up test. Autopsies gave evidence of infection in every case.

Herd 3.—Among eleven animals which had been certified as non-reactors before their admission to the herd, three reactors were discovered by the follow-up test.

Herd 4.—One of the animals in this herd reacted to the test, although a local veterinarian had not succeeded in demonstrating infection, by repeated applications of the ophthalmic and intradermal tests.

Herd 5.—Upon discovering tubercular lesions in a cow which was slaughtered owing to a fractured hip, a physical examination of all the cattle in the herd was made. Two had peculiar nodules on the skin, which were removed, and examined under laboratory conditions. An emulsion of the contents in saline solution was made and injected into rabbits. The rabbits developed tuberculous lesions. The two cows, together with two other apparently healthy animals were tested by the follow-up method. One gave a positive, and the other a doubtful reaction.

City of Sheffield 1923 Report.

In the course of his report for the year 1923, Mr. J. I. Lloyd, Chief Veterinary Inspector for the City of Sheffield, says:—

"The number of slaughter-houses in use last year was 166, forty-one of which belong to the Corporation, and are let out to butchers. Out of 125 private slaughter-houses, eighty-eight are licensed annually under the Sheffield Corporation (Consolidation) Act, 1918. In addition there are three horse slaughter-houses and one place licensed as a knacker yard.

"The slaughter-houses were regularly inspected, the total number of visits paid being 5,985. 4,136 visits were also paid to the market places, shambles, shops, stores, etc.

"The total weight condemned during the year was 94 tons 2 cwts. of meat; 58 tons 2 cwts. 2 qrs. of fish; and 3 tons 15 cwts. 2 qrs. of rabbits.

Inspection of Horses and Carcases for Exportation Abroad.

Number of horses submitted for examination ...	1,967
Number of carcases passed for food	1,941
Number of carcases condemned unfit for food ...	26
Number of carcases exported abroad	1,941
Number of visits paid to horse slaughter-house	692
Number of horse slaughter-houses	3

Under the heading "Dairy Inspection," Mr. Lloyd gives the following definitions of various types of milk samples:—

Mixed Samples.—A mixed sample is a sample of milk from the mixed milk of a herd, sent into Sheffield for sale by road or rail conveyance.

Control Samples.—A control sample is a sample of milk taken from a herd that is being inspected, either during routine inspection or following up a tuberculous mixed sample.

Special Samples.—A special sample is a sample taken from a cow with a suspicious udder, found when inspecting herds in the city or country, from which milk is consumed in Sheffield.

Number of Samples of Milk bacteriologically examined for Tuberculous Infection.

	1921.	1922.	1923.
Mixed Samples	1,057	1,073	957
Number found Tuberculous...	88	81	68
Percentage	8·3	7·5	7·1
Control Samples	129	123	98
Number found Tuberculous...	28	18	23
Percentage	21·7	14·6	23·47
Samples from cows with suspicious udders	144	132	134
Tuberculous—Biological ...	17	9	10
Do. —Microscopial ...	64	61	63
Do. Total number found	81	70	73
Percentage	56·3	53·0	54·47
Estimated number of cows on country farms where mixed milk samples were free from tuberculous infection ...	16,473	13,830	13,335
Number of country cows clinically examined for tuberculosis of the udder, in following up mixed samples	1,615	1,569	1,119
Tuberculous	61	48	53
Percentage	3·8	3·06	4·73
Number of city cows clinically examined for tuberculosis of the udder	7,471	5,674	6,427
Tuberculous	21	23	19
Percentage	7*	·66§	·5†
Disposal of cows with tuberculous udders:—			
Killed	66	55	58
Passed	47	39	38
Percentage	71·0	70·9	65·5
Condemend	19	16	20
Percentage	29·0	29·1	34·5
Sold or otherwise lost sight of ...	17	16	16

* Percentage on 3,000 only.
§ Do. 3,500 only.
† Do. 3,700 only.

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DIVISIONAL REPORTS.

Dumfries and Galloway Division.*

A meeting of the above Division was held in the Crown Hotel, Castle Douglas, when there were present: Messrs. Milligan (President), Lindsay, Young, Mackenzie, Waddell and MacAlister (Secretary and Treasurer).

The minutes of the last meeting were read and adopted.

The PRESIDENT (Mr. Milligan) then gave his Presidential Address, as follows:—

On assuming office, it is usual for the newly-appointed president to either read a paper on a scientific subject or pass a few remarks on current politics.

As we have to-day the pleasure of hearing a paper on epizootic clitill from our past president, any remarks of mine will of necessity have to be short, and I shall confine them principally to this association.

First of all, I must thank you most heartily for electing me your president for a term of office.

It is a position to which I have never aspired, but I freely accept office as a duty, and I shall endeavour to do my utmost to further the interests of this association. It will certainly be an education and a new, and I trust a pleasant, experience.

Succeeding, as I do, two presidents who are past masters in the art of conducting meetings, I should necessarily feel my responsibilities very acutely. But I feel secure in the knowledge that I have the backing of one of the best hon. secretaries in any division of the National. (Hear, hear.)

This association was started almost five years ago, and was the outcome of a meeting of veterinary surgeons in the three southern counties, who met primarily to discuss ways and means of improving their financial positions. It was, of course, necessary to form an association, and our deliberations resulted in the formation of the Dumfries and Galloway Veterinary Medical Association.

There are something like twenty practitioners engaged in active practice in the above area, so that, although we are a young society, we are also a small society. It has occurred to me that we might, by a little persuasion, induce the members in Cumberland to join us. At present we have two members on our roll, but I should like to see all the practitioners enrolled in this division.

This might entail a new name for our association, but that is a matter which could be easily adjusted. We are all what might be called country practitioners, and as such we depend on agriculturalists for our livelihood. Every profession and every trade has its society or union, and from recent observation the agricultural community seem to be very well organized.

During the early days of this association we had well-attended meetings and animated discussions. But, like those of many associations, the attendances have fallen off, and the usual apathy has set in.

Now, gentlemen, this is a state which we must try and alter, and I appeal to you all present to try and persuade the passive members to rouse up, and make an endeavour to put in an appearance—and not only put in an appearance, but take an active part in all the proceedings. Knowing, as I do, the extreme difficulties which beset the path of a single-handed practitioner—such as an urgent call on the morning of a meeting,—I can in many cases sympathise with absent friends. But, are all the absent members triers? Apart from the financial benefits which every member has derived, there are the scientific and social sides to be considered. It is impossible for any member to come to a meeting and go away again without learning something, and it is always a very great pleasure to meet old friends, and to get better acquainted with new ones.

This association cannot progress by members merely paying their subscription, absenting themselves from meetings, and reading all about them in the *Veterinary Record*. If each member could only interest himself to such an extent that, in the event of his absence, the meeting would be stale without him, we would have no more cause for complaint. Our bumper meetings have undoubtedly been those that were of a surgical nature. But, were we to go on having nothing but surgical demonstrations, the enthusiasm would wane, and the usual apathy would eventually set in.

If we wish to progress we must at any cost all cling together. There must be no breaking away.

To return to the conditions which prevailed previous to the birth of our association is unthinkable. (Applause.) No address, at this time, would be complete without a reference to foot-and-mouth disease, and I should like to pass a few remarks with a view to stimulating a discussion.

Much has been written about the appalling slaughter and the terrible waste of money thrown away in connection with the Ministry's slaughter policy. Personally, I do not share those views, as I consider—owing to our present knowledge of the disease—that the only sane policy is the slaughter policy. Had this been applied expeditiously early on, plus a general stand-still order, the epidemic would never have attained such alarming proportions. The trouble in the administration lay, I suppose, in the fact that

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MICROSCOPIC EXAMINATIONS FOR TUBERCULOSIS MADE IN FOLLOWING UP POSITIVE MIXED SAMPLES, AND ORDINARY INSPECTION OF CITY COWS, DURING 1923.

Total Number of Samples taken from cows showing symptoms suspicious of Tuberculosis of the udder	134
Do. found Positive Microscopically	63
Do. found Negative Microscopically	71

Of the 71 sent for the biological examination—
10 returned positive.
61 „ negative.

Thus definite results have been obtained from 134 samples of milk, and of these 73 have been proved definitely positive. Out of this 73, 63 were found microscopically or a percentage of 86·3.

* Received on December 30th, 1924

the number of officers at the disposal of the Ministry was not commensurate with the extent of the outbreak.

Recently an alternative scheme has been in operation, and owners have been allowed to isolate and treat their animals. The crux of this scheme lies in the word isolation.

How many farm steadings are really suitable for isolating animals? Are these premises zealously guarded, to see that perfect isolation is carried out?

A great deal of prominence has been given to the treatment of the Ayrshire herd by the "Thomson method." This treatment was carried out by an old Annan lady, who is now looked up to by many as a godsend to agriculture.

From repeated conversations with farmers who well remember the disease in their youth, this disease ran its course in from ten to twenty-one days. Mild cases received no treatment whatever, and others were treated with salt and water. This scheme of treating animals—owing to the highly contagious nature of the malady—should only be carried out on pedigree stock, on suitable premises. They should also be treated only by veterinary surgeons under the personal supervision or direction of the chief veterinary officer to the Ministry.

To allow any Tom, Dick or Harry to administer treatment is only holding the veterinary profession up to ridicule, and setting the clock back many years.

All the members took part in the very interesting discussion which followed.

Mr. LINDSAY, Dumfries, moved that the Secretary be instructed to write to the Cumberland practitioners and ask them if they would join the division, some of the meetings to be held in Carlisle. This was seconded by Mr. WADDELL (Castle Douglas), and unanimously agreed to.

Mr. LINDSAY read a paper on "Epizootic Clittle (Panaritium) in Cattle." All the members took part in the discussion, which was of a very interesting and varied character.

Mr. Lindsay's paper was as follows:—

When our President asked me to supply a subject for discussion at to-day's meeting, I suggested "Epizootic Clittle," having in my mind several reasons for doing so. Most of us, I presume, have had some trouble with this condition at times, and that supplies ample scope for discussion. This is not a disease that has attracted much attention from our cattle pathologists.

Clittle is a term applied to a suppurating condition, found in the feet of cows, that has not been set up by a known traumatic cause. There is a simple form, where you have a weeping condition of the interdigital membrane. On examination you will find it is inflamed, the lameness is not excessive, and the farmer usually does not seek veterinary attendance.

It is the "Epizootic Clittle," called "Panaritium" by Dr. Moller, to which your attention is requested. This, in my opinion, is caused by the *Bacillus necrosis*, which gains access to the deep-seated interdigital tissues. There is intense inflammation of the surrounding tissues; the distance between the claws is widened; it rapidly leads to suppuration, and this extends not infrequently to the bones and tendons, producing grave conditions. When that happens the symptoms are very severe loss of appetite, stoppage of milk secretion, and swelling around the coronet. The pain is very intense, and a general wasting ensues. The skin becomes gangrenous—an aperture forms; ichorous pus is discharged. I think that before this bacillus invades the tissues, there must be a small aperture to permit of its entrance. Sometimes one hind foot only is affected, or may be a hind one and a fore one; if a fore one is affected it is generally on the inside. The animal is disinclined to rise; it lies continually and no measure of relief is obtained till the parts burst. If neglected at this stage, infection of one or both coffin joints follows, and often results in open joints or fistulæ. If you find cases with interdigital swelling and bursting on the inside of the coronet, I can assure you trouble is in front of you, and skill is required, especially to satisfy the owner. It is very annoying to the practitioner, when he gets the inside quarter going on satisfactorily, to find on his next visit that the outside quarter is affected. That is satisfactory proof that it is infectious; in other cases you will have extension into the pedal bones. It is not uncommon to find 20 per cent. of a herd affected. The first lesson I got *re* this trouble was in 1911, when I had fully 20 per cent. affected in one herd alone. It is not unusual to find three affected in a morning, they having been left in a normal condition the previous night. The disease can break out either at the toe or bulb, or interdigitally; the worst cases are those in which the disease attacks the connective and adipose tissue lying above the interdigital space; if such an attack is improperly treated necrosis will extend to the coronet or pedal bone.

As to treatment, diversity of opinion exists. Some practitioners believe in poultices; with that view I entirely disagree, as my experience was that it gave very unsatisfactory results; in fact, it was useless, tending only to prolong your cases and leave your client with a heavy bill to face. Some advocate the use of a red-hot iron, placing it between the digits. The treatment I adopt is the following: As soon as an abscess is discovered I have it opened, wash the wound out thoroughly, and as a rule after the abscess is punctured the pain soon disappears; place the foot in a bucket of cold water, to which a strong antiseptic has been added, for fifteen to twenty minutes; after that, dress it with the following ointment made up: perchoride mercury, spirits of tar, and lard. Dress every day for three days, and after that twice or thrice a week. Draw a piece of tow out, anoint it with the ointment, draw it down two or three times over the cut, then fasten on a bandage, usually in the figure 8. If you find that the foot has burst behind, incise the interdigital membrane, and remove the necrosed tissue. Should the lameness subside you may consider the case is going on satis-

(*Continued at foot of next page.*)

Western Counties Division.

Mr. Roberts' "Clinical Notes."

(*Continued from page* 37).

Fits or Convulsions.—During the last few years I have been puzzled with cases that could not be termed epilepsy, or convulsions from enteritis, but for the want of better knowledge and scarcity of *post-mortem* examinations I have called them "fits due to absorption of toxins."

History of a typical case.—Cow had calved about three months, and for a week or two before advice was sought by the owner the cow had not been doing well. She had not been eating very well, was tucked up, with the head and neck outstretched, eyes staring, and occasional grating of teeth. There was slight diarrhœa at times. Temperature 103-105; pulse full and frequent. Eventually, if the animal was excited, or if the owner attempted to drench the cow, she would have a fit or convulsion and die during the seizure, or perhaps have two or three attacks before death occurred.

Treatment —When possible this consisted of linseed oil mixed with a little hot water and ℥ii. of ol. tereb., followed by frequent doses of chloral hydrate or potassium bromide and bicarbonate of soda. I do not remember any good results following this treatment.

During the past three months I have had what appeared to be similar cases, and in desperation gave ℥vi. of ol. tereb., with a quart of ol. lini, and a little hot water, followed by ℥ss. doses of carbonate of ammonia and bicarbonate of soda every three or four hours.

Result.—The three cases recovered.

Remarks.—I do not know if these were natural recoveries, or if the dose of ol. tereb. had any beneficial effect, and I should appreciate your observations,

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(*Continued rom previous page.*)

factorily. If the pain increases and the coronet swells, you may be sure it is a prolonged case, and in all probability the treatment will require to be varied. If the practitioner expects clinical success with those cases he will not require to be content with giving instructions, leaving dressings and preserving his own hands unsoiled, as thoroughness in application of treatment is essential. I am of the opinion that the sooner you get a knife into the swelling the better; incise early and frequently. Should the cow be non-pregnant and in good condition, and a prolonged case probable, I advise slaughter at once.

Prevention.—Whenever you leave two or three cases in a herd, disinfect all the feet of the remaining herd, and smear the interdigital space and coronets with tar. I have found this very beneficial.

A vote of thanks to the essayist concluded the proceedings.

N. H. MacAlister,
Hon. Secretary.

gentlemen, also on the point as to how it is that we rarely, if ever, see steers or maiden heifers suffering from these attacks or the attacks of the first described disease.

I believe that similar cases to what I term fits are called meningitis by some, but I have never been able to satisfy myself that this was correct in the few cases on which I have made *post-mortem* examinations.

Pseudo-Tetanus.—I was requested to see a two-years' old heifer in calf. She had been grazing with seven other cattle—three heifers, four cows, in a rough pasture field with a stream running through it. There were wild lilies, orchids, celery, fool's parsley, and numerous other common plants growing, but no belladonna or hemlock.

Symptoms.—I found the animal very stiff with tail slightly elevated, head and neck outstretched. The muscles generally were boardlike to the touch, and the heifer moved like a wooden one. The jaws were set and there was occasional grating of the teeth. Temperature 103 degrees; pulse frequent, but regular and full. Slight tympany of the rumen. I suspected tetanus, although there was no movement of the jaw if the head was raised. Next day two other heifers were in a similar condition, then I knew it was not tetanus, and the first one was down on her side, unable to rise or turn. We raised her, and she walked about fairly well.

Treatment.—I gave linseed oil and warm water, left ℥iv. doses of mag. sulph. to be given as often as possible in drinking water, or wet mashes, and told the owner to drench them with tea, milk, linseed, treacle, strong coffee, etc.

The owner, who was a very good nurse, stuck to his job night and day. In a fortnight all animals had recovered, and all calved to time later.

I carried the stomach tube and pump with me, but upon each visit returned without using it.

Remarks.—I do not know if these are cases of vegetable poisoning, or if the mixed grazing affected the stomach walls and vagus, causing reflex symptoms. Since these cases I have had two others, which proved fatal owing to bad nursing, both dying probably from asphyxia, due to neglect when cast on the ground.

"Crankums"—Arthritis and Panarthritis of the Stifle. Whether this is a local term, or a general term used by farmers in the west country, I do not know, but I first heard the name when I came to Devonshire five years ago.

Symptoms.—These are too well known to need any description here. Usually one or both stifle joints are affected, and sometimes—I believe—the high joint.

History.—This is, in most cases, that the cow calved before her time, and did not clean well, consequently I have come to the conclusion that this is a sequel to abortion, or secondary infection from the womb.

Treatment.—A sharp mixed blister is usually beneficial, combined with good food and tonic medicine containing arsenic—I prefer Donovan's solution. Alkaline treatment has also proved very beneficial in my hands. I intend in future to treat the uterus also.

Some practitioners inject the joint with some antiseptic, I believe, but I have not tried it.

MILK FEVER.—*Subject:* Pure-bred shorthorn cow, with fourth calf. Calved the day previous.

7 a.m. (October 1st), cow was seen to go paddling her hind legs, and on my arrival at the farm (10 a.m.) was down, semi-comatosed and quiet. The temperature was normal.

Treatment.—I injected the udder with chinosol solution; gave hypodermic of strychnine. I rubbed her well and left the usual instructions about keeping the cow in a natural position, etc.

1 p.m. Cow showed no improvement. I gave hypodermic of strychnine and injected udder again.

9 a.m. next day cow rallied slightly. I gave an aperient and left a stimulant.

9 p.m. Cow had relapsed. I injected udder and gave hypodermic of adrenalin and saline solution, and ordered mustard to the spine.

9 a.m. next day. Cow still slightly dazed and down, and she remained so for three days, when she was sent to the herd.

Remarks.—This is one of several unfortunate cases of milk fever during this autumn. Naturally one suspects the season and the plentiful supply of grass, but if I were asked why I lost cases of milk fever this year and not in other years I could not give a very lucid explanation. I have had more trouble with milk fever this year than in the previous twenty years together.

Some years ago I used to carry an oxygen cylinder, but I have given that treatment up. However, I have wished I had had an oxygen cylinder on several occasions this autumn.

PARTURITION PUZZLES. October 10th, 1922.—*Subject:* Pure-bred Guernsey cow, unable to calve.

Position of fœtus.—Both fore feet in vagina, head back in the uterus.

Treatment.—Removed one fore leg, raised head with blunt hook in eye socket, and delivered fœtus easily. Cow cleaned normally. Next day the cow was dead. *Post-mortem* revealed nothing abnormal.

September 20th, 1923.—*Subject:* Pure-bred Devon cow, unable to calve. Head and one fore leg protruding from vulva.

Treatment.—Slight traction in various directions delivered the calf. Cow cleaned, but died. *Post-mortem* revealed nothing abnormal.

Remarks.—I told the owners that the cows died of shock, but perhaps I overlooked something during the *post-mortem*, possibly embolism.

INOCULATION WITH LIVE BACILLI OF CONTAGIOUS ABORTION.—Having done a considerable amount of this, one periodically comes across cases of unfortunate sequelæ, viz.:—

1. Seven heifers were treated, three produced live calves, three dead calves and one heifer remained barren. Of the three that produced dead calves, one became unthrifty, and developed stifle joint tremble and the owner was unable to fatten her.

2. Five heifers were injected. No live calves were born, one heifer would not breed a second time, and she was partially fatted with difficulty.

Of course the owners did not blame the vaccination, but they would not have it done again.

It may be that the cause of these troubles was not due to the inoculation, because in many outbreaks similar treatment appears to act remarkably well. It appears to me, however, that unless herds are badly infected we should be very cautious when advising inoculation treatment. Possibly I have overlooked some cause other than the inoculation, and I should be pleased to be enlightened.

It is possible that many maiden heifers are infected naturally before they are treated, and this may be the reason why we get variable results. We advise clients not to purchase cattle because a new strain of the disease may be imported, and at the same time advise inoculation with live bacilli.

Personally I believe it would be wise to have herds "agglutinated," but the question of expense always crops up.

Before concluding I will describe a case for what might be termed selfish reasons, i.e., hoping to gain some information for future guidance.

Subject.—Entire cart colt, aged 18 months, seen to be well one day and found ill the next.

Symptoms—Head outstretched, having a frightened appearance; partially paralysed in the right side; moved in a circle stiffly, and when trotted dropped slightly on the off-fore. The off-hind stifle joint was shot out from the body and the limb was flexed. Temperature 102 degrees for a day, then normal, fed well, pulse slightly accelerated, but good.

Treatment.—Mag. sulph. in small doses in the food or water, electuary containing belladonna and nux vomica.

The colt improved slightly for a few days and walks almost in a straight line, but remains stiff in the head and neck, and is apparently not quite normal in the off-fore shoulder. It is now five weeks since I first saw the colt, and he has made no more progress.

Diagnosis.—Lightning stroke. But I should like your opinions. *(To be continued.)*

Obituary.

MAJOR J. W. B. SHOULDING.

On Sunday last, there passed away, in Major J. W. B. Shoulding, M.R.C.V.S., of 15 Greenway, Uxbridge, Middlesex, one who held for a brief period the honoured title of "Father of the Professions," and who could claim a military career of great interest and distinction. The deceased gentleman qualified early, at the age of 20, on June 2nd, 1852, at London, to enter the army. Major Shoulding served in the Crimean Campaign (1856) and was present at the fall of Sebastopol. During the Indian Mutiny (1857—8) Major Shoulding acted as staff officer at the storming and capture of Petta. Recognition of gallant service was made by his name being mentioned in despatches in the *London Gazette* for August 10th, 1858 and the award of a medal; in a similar award, with clasp, in connection with the capture of forts in the China War of 1860, and in that of a third medal for service in the Afghan War, 1879—80.

Major Shoulding lived for some time at 77 The Greenway, Uxbridge, and was locally known as a generous contributor to all good causes. He leaves a widow, 86 years of age.

The funeral took place yesterday at the Hillingdon Road Cemetery, Uxbridge, when many members of the profession paid, by their presence, tribute to a long and gallant life. The Council of the Royal College was represented by Mr. F. Bullock and Major-General Sir John Moore.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest in these columns.

Since so much interest was taken in the subject of "The Veterinary Surgeon in Fiction," our readers (who have not already seen it) will be interested to see a short story in *Chambers' Journal* for this month, entitled "The Dartmoor Vet." The writer, Beatrice Chase, though writing nominally of "the Vet.," has much more to say about the client (herself) and the patient (a cat). The narration of the sayings and doings of the lady are most true to life, and many of us know the type only too well. The description of the sick cat is excellent, and one seldom sees such close observation of detail in novels and short stories.

As for "the Vet.," we grieve that our profession should be typified in a man who cannot speak his mother tongue correctly and who evidently holds no particular position in the social scale, and seems content with his lowly position. His warm heart and gentle manner leave us wondering if this man was not a master in the handling of clients and if his professional solicitude were not put on for the occasion to cloak an obvious difficulty he had to contend with, both in diagnosis, treatment and in answering the lady's questions. His tact is great, and he is an object lesson for the new graduate, because he is a type that women like. We hope that Miss Chase will become better acquainted with the modern veterinary surgeon before she again attempts to describe one of our profession.

Royal College of Veterinary Surgeons.

Election of Council, June, 1925.

The following nominations have been made for the forthcoming election of Council R.C.V.S. Names marked with an asterisk are those of serving members, who are nominated for re-election. There are eight vacancies.

Name.	*Address.*	*Proposers.*
*Blackhurst, C.	Preston.	J. D. Whitehead, J. Spruell.
*Carter, J. H.	Henley.	J. D. Whitehead, J. Spruell.
Hobday, F. T. G.	London.	J. McFadyean, J. Moore.
*King, W. S.	London.	S. H. Slocock, J. Moore.
*McKinna, J.	Huddersfield.	O. Charnock Bradley, J. Clarkson.
*Simpson, P. J.	Maidenhead.	S. H. Slocock, O. Charnock Bradley.
*Slocock, S. H.	Hounslow.	Hy. Sumner, J. Abson.
*Spencer, T. F.	Kettering.	J. Abson, G. P. Male.
*West, E. Alfred	London.	S. H. Slocock, Hy. Sumner.
Whitehouse, A. W.	Glasgow.	A. Gofton, S. H. Gaiger.
Young, T. Dunlop	London.	F. T. G. Hobday, J. W. McIntosh.

Distemper Research.

Progress of the "Field" Council.

In consequence of the death of the Duke of Beaufort, formerly President of the *Field* Distemper Council, that office has been accepted by the Duke of Portland, with the Duke of Buccleuch as Vice-President, and Lieutenant-Colonel Lane Fox, M.P. (Secretary for Mines), as Chairman. The present Duke of Beaufort has joined the Council. The organising secretary is Mr. E. W. Moss-Blundell, Windsor House, Bream's Buildings, London, E.C.4. The fund is still in need of subscriptions. The American Distemper Committee has during the past year closely co-operated with the *Field* Distemper Council and made its aim known in all parts of the United States, with the result that donations and subscriptions from America have continued to reach the Council in London.

The third report of the Technical Scientific Committee to the Council announces the completion of the special isolation compound and kennel buildings at the *Field* laboratory of the Medical Research Council, and the inception and progress there of the breeding of a clean stock of puppies which forms the first phase of the main programme of investigation. The report adds :—

"Our experience with puppies has not been without value as a guide to the further conduct of the work, and it has emphasized the difficulty of procuring an uncontaminated stock of animals. A collection of puppies, all born in the compound from bitches introduced from quarantine, is now being reared. There are now in the compound twenty-two puppies, four mothers, and four bitches still to whelp ; two litters already have been weaned and their mothers removed. The other bitches are to be removed as soon as practicable. It is not at present considered desirable to breed second litters from the parent bitches.

"The aim at present is to see whether the puppies can be brought successfully, without signs of disease or infection, to weaning age. It is hoped to raise a generation born inside the compound and never having had distemper, and from this a generation which has never even been in contact with animals that have at any time had distemper. Should it be necessary, resort may have to be made to some alternative procedure, such as rearing the puppies by hand. In the meantime, there are no untoward signs among the animals now in the compound."—*The Times.*

We were pleased to note in the list of Birthday Honours the inclusion of the name of the eldest son of Sir John and Lady M'Fadyean, who has received the honour of a Knighthood.

Sir Andrew McFadyean, who is 38 years of age, received his education at University College school and afterwards at Oxford University. He entered the Civil Service fifteen years ago and was attached to the Treasury Department where he was soon promoted in succession to several important Private Secretaryships. On the appointment of the Reparations Commission he was made Secretary to the British Delegation at Paris and subsequently became General Secretary to the Reparations Commission. His present appointment is that of Commissioner of Controlled Revenue under the Dawes Scheme.

We offer our hearty congratulations to Sir Andrew and also to Sir John and Lady M'Fadyean.

The Tuberculosis Order.

Replying in the House on December 11th, the Minister of Agriculture said he had received representations from a number of local authorities and other bodies in favour of the revival of the operation of the Tuberculosis Order of 1914. The provision of the necessary funds for the payment of compensation to owners of animals slaughtered under the Order may require further legislation, and the financial aspect of the question is now under consideration.

A case of foot-and-mouth disease was reported on Monday, at Nuttall, Notts, and another has occured on the Nottingham Corporation sewerage disposal farm at Stoke Bardolph.

CORRESPONDENCE.

Anthrax Order of 1910.

THE PRESENCE OF ANTHRAX BACILLI IN THE BLOOD DURING LIFE.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In your issue of 3rd January, in the report of the meeting of the Lancashire Division, we find Mr. Holroyd initiating a discussion on the Anthrax Order of 1910, and offering a good deal of fair comment on those features of the Order that most invite the criticism of field-workers of practical experience like Mr. Holroyd.

The following notes are intended as supplementary to, and not critical of, what Mr. Holroyd saw.

At the top of page 12, he says: "I think most of you will agree that there are a great many more cases of anthrax than are reported." The truth of that statement will be generally conceded, especially where the Local Authority has no Order in operation beyond the Anthrax Order for compelling the notification of bovine fatalities before disposing of carcases.

Lower down on page 12, he says: "Can anything further be done than is done at present to get the owners to report these suspected cases?" I can assure him that in this County the Diseases of Animals (Lanarkshire) Order of 1907 fills the role to which he refers exactly, and its capacity to act as a useful handmaiden to the Anthrax Order, and to rope in cases of anthrax that would otherwise escape, finds ample corroboration in the action of some other Local Authorities who, in later years, have obtained almost similar Orders. At periodic intervals the police deliver a copy of the Order to all stock-owners in the County. On occasion owners are prosecuted for failure to report cases under the Order.

The wisdom of paying compensation, even on the low scale suggested by Mr. Holroyd, to the owner of an animal that has died of anthrax, is a debateable issue that has not yet appealed to the powers that be, though presumably it would encourage owners to report deaths and thereby increase the number of cases of anthrax detected and dealt with. Many people would be of opinion that only on that ground could compensation be justified, since an owner who fears loss from anthrax can easily insure his stock at reasonable rates.

Referring to his treatment of highly-fevered in-contact animals that are presumably suffering from anthrax, Mr. Holroyd indicates his faith in it and reveals in his reply that the medicaments he uses are carbolic acid and turpentine in large doses. That such treatment of these patients finds fairly wide application is well known, and one must concede the propriety of the veterinary adviser doing something for his clients' sick animals, but though the *denouement* be that the majority recover after treatment one must not assume that recovery is due to the treatment, for it, perhaps, occurs in spite of it. Surely the use of anti-anthrax serum would be more justifiable at the hands of scientific men. A parallel case is found in the attempts which many practitioners used to make to control abortion by the use of crude carbolic acid, but I judge that this treatment has now in great measure given place to the use of the specific vaccine. In any case, we have repeatedly isolated highly-fevered in-contact animals, from one to six in number, and have noted their capacity, in as great a percentage as Mr. Holroyd quotes, to put up a successful fight without the use of any medicaments. So much so, that we have only found ourselves making enquiry for specific serum when fatalities have increased to three in any given outbreak, and such instances are indeed rare in these parts. Moreover, doses of carbolic acid and turpentine will not be taken voluntarily by the animals, and who will say that there is no risk of contamination to the individual who undertakes the drenching, despite the admission of Mr. Holroyd that "he had never, in his experience, found anthrax bacilli in the blood during life, though he once found some near the throat." (This last clause seems a little involved.)

Though it be true that there are not many recorded cases of the finding of anthrax bacilli in the blood of live animals, one has to bear in mind that they have been so found, and would be found more often were it not that the victim of anthrax is usually dead before the Veterinary Inspector is called in. Hutyra and Marek put the earliest time before death when it has been possible to demonstrate anthrax bacilli in the blood at sixteen to eighteen hours. This appears to me as a very early period at which to find them, but it may be possible in exceptional cases. I have had some little opportunity to investigate in this direction with highly-fevered in-contact animals of two kinds, viz., those that got well, and those that died of anthrax. In none of the former have I ever got a positive result, either microscopically or culturally, but I have thrice been successful in the latter cases. One case in which the demonstration was made seven and a half hours before death, and well witnessed, is perhaps of sufficient interest to put on record.

On 10th February, 1917, a cow died of anthrax at North Garngour Farm, Lesmahagow (Mr. James T. Orr). When it was getting dark on the evening of the same day, and just before the anthrax carcase was removed by the knacker, the local Sergeant of Police telephoned that Mr. Orr reported the neighbouring cow, which had been removed to an empty chain next to the bull, as being unwell and shivering. The Sergeant suggested that, as the knacker's motor had just arrived at his door, he would go to the farm and bring a further report in a short time. This was to the effect that the cow seemed a little better after being rugged up. Next day at nine a.m. she was reported to have been dead for twelve hours, and I diagnosed anthrax. Six days later the owner reported the bull to be ill at 9-30 a.m. I arrived at the farm at 10-30 a.m., and noticing a pinkish-straw coloured rivulet from each nostril, I smeared the discharge and found a few anthrax bacilli quite characteristic, while others showed ghost form. I immediately punctured the skin at the tail-head with a needle, and having smeared the drop of blood and stained with McFadyean's methylene blue, obtained a typical anthrax slide. Both of these slides were demonstrated to five adult persons on the spot. Believing the bull would die within a short time I stayed at the place in order to attend to the carcase. To my astonishment, the bull did not die till 6 p.m., and during the day I had the opportunity of taking detailed notes of his behaviour and making blood smears periodically, all of which were more beautiful than any I have made after death. The slides and a description of the case were sent to Sir Stewart Stockman. One can only conjecture how much earlier than 10-30 a.m. it would have been possible to detect anthrax bacilli in the blood of this animal.

Can it be suggested that the drenching of such a case as this would be a safe job for the attendant? To the individual who can estimate the danger, I know no greater killjoy than the knowledge that he has unnecessarily, in some way, run the risk of anthrax infection.

Mr. Holroyd might have made some comment on the risks which owners and others take when (in order to separate the dead from the living) they so often handle and remove the suspected carcase from its stall to the outside.

Regarding the staining of anthrax smears, it is a great boon to the Veterinary Inspector that McFadyean's methylene blue is so efficient and dependable. We use nothing else in the field, having found it more serviceable than any other in cases wherein a margin of doubt may exist.—I am, yours faithfully, HUGH BEGG, County Veterinary Inspector.

Hamilton,
9th January, 1925.

Glasgow Veterinary College.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Your article in the *Record* of 22nd November last, *re* the above, must have saddened the heart of every practitioner who sat at the feet of James McCall, and imbued wisdom and instruction from that grand old man, and the Founder of the College. I am sure every former student would more willingly contribute one guinea a year towards the maintenance of the College, than he does at present for the possession of a Diploma, which, according to the latest teaching, is simply a "licence to practice," although it is stated in the Diploma, that the owner is "qualified to practice." What I would suggest is that the Royal "Dick" Veterinary College should be reserved for the training of super-specialists under the guidance of competent idealists; and that the Glasgow College should be allowed to resume its course, unhampered by financial worry, and continue to produce, as it has always done, sound, practical veterinary surgeons, men who have occupied and are occupying honorable positions in the profession all over the world, and men who, benefitting from the scientific training which they have received, have not required, and do not require, to return to College to be spoon-fed with every new bit of legislation issued by the Government.

There is plenty of money in the West of Scotland, and surely the governors could organize a bazaar on a gigantic scale, so as to place the College on a sound financial basis, and I am certain every former student would willingly give assistance—financial and otherwise.—Yours faithfully, ADAM KERR.

Fernbank,
Ellon,
10th January, 1925.

Suspected Irritant Poisoning.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—With respect to the interesting report of Mr. Llewellyn Jones concerning the poisoning of a number of calves, it is somewhat difficult to make out whether the undecorticated cotton cake to which he refers as being a portion of the calves ration was given before the first symptoms appeared, but if, on careful enquiry, this is found to be the case, I would like to direct his attention to the article on feeding in Professor Wooldridge's book on Veterinary Medicine, etc., Vol. 1, page 532, where the following sentences occur with regard to Cotton Cake: "*The decorticated cotton cake is the more valuable, as the husks have a considerable irritating effect on the walls of the digestive tract, but neither variety should be used as a food for young animals, especially calves, to which it is almost a poison.*" Further on, is the following statement: "*Cakes are also mixed with deleterious materials, the refuse husks of castor or even croton beans being sometimes found particularly in the cotton cakes.*" If these premises are correct, the fact of the delicate calf not becoming affected might be explained by the healthy hungry calves swallowing all that was given them, while the delicate one exercised a power of selection and rejected what, to it, was unpalatable, i.e., the cotton cake. I do not say, of course, that this is the correct explanation, but it might suggest a useful line of enquiry.—Yours faithfully, WM. WOODS.

Wigan.

Castration of Pigs.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I was very interested in Capt. Kerr's article on above subject in last week's *Record*. I consider it to be the best article on the subject I have ever seen anywhere, as he gives so many details, and these are so important and also for his very useful diagrams. I have operated on some thousands of female pigs, and for some years I used Capt. Kerr's method of holding them, but for years now I have filled a sack with straw and laid the sows on the full sack with the knee on the head. I find, as I get older, that it saves my back considerably. In connection with the castration of the male pig with scrotal hernia, why not make a covered operation: that is, cut through the skin, but not through the tunica, twist the testicle and tunica up into a cord to make sure that there are no intestines, apply the ligature low down and remove, and if not quite sure of ligature the wound can be stitched up. This will restore the pig to normal, whereas Capt. Kerr's operation leaves him with the hernia as before, and usually after a poorly night the animal is found dead. The only drawback to castrating pigs is the price, as castrators do it here for a mere song, and the average Welsh farmer would be dead by morning from apoplexy if one asked him one guinea for castrating their boar.—Yours faithfully, G. J. ROBERTS

Pwllheli.

"The Veterinary Surgeon in Fiction and Reality."

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In *Chambers' Journal* for 1st January, 1925, there is a short story entitled "The Dartmoor Vet.," by Beatrice Chase.

The author terms her story a character study of the Veterinary Surgeon who, by his successful handling of acute pneumonia in a cat, merits the tribute so charmingly expressed. But it is something more than a character study, for Miss Chase, perhaps unconsciously, reveals the two-fold relationship with our clients, which we may often be called upon to assume. We may gain our client's confidence by a spontaneous sympathy with and affection for the dumb patient, and through these very qualities we may find ourselves called upon to sustain the roll of family physician to our patient's nursing staff.

In commending this story to one and every member of the Profession, I would suggest we owe Miss Chase our gratitude for the most beautiful portrait yet published of the Veterinary Surgeon in Reality.—Yours faithfully, TOM HARE.

Liverpool,
12th January, 1925.

Several other letters are unavoidably held over through lack of space.

Answers to Correspondents.—Professor J. Penberthy, Mr. G. J. Roberts, etc., many thanks for your appreciation of the *Record*.

The Editor acknowledges the receipt of the following:—
Communications from Capt. E. S. W. Peatt, Messrs. S. J. Motton, L. W. Wynn Lloyd, and T. Parker.

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